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A Study on Analysis of Non -Performing Assets and its Impact on Profitability

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***Abstract* -**The banking industry plays a critical role in the Indian economy. Measuring and maintaining the asset quality of banks is important for the development of the banking sector. Nowadays, the asset quality in banks, especially the Public Sector Banks is constantly deteriorating and thus causing intolerable stress to the banking sector, regulators, and Indian economy. The objective of the present study is to understand the level of Non-performing Assets (NPA), and how it influences the profitability of the banks. For this purpose, the study considered Gross and Net NPA of 10 Public & Private sector banks from April 2014 to March 2018. The study identified that both the public and private sector banks gradually increase their Gross & Net NPA during the period. The study found that there is a significant positive relationship between Gross NPA and Net NPA of public and private sector banks. The study also found a significant negative relationship between NPA with Return on Assets (ROA) of public & private sector banks. The impact of ownership (public and private sector banks) significantly influences the Gross and Net NPA. The Gross NPA has a significant negative influence on ROA whereas, Net NPA has a positive influence on ROA of both public and private sector banks. So the study recommends to the regulators and respective bank officials to take the necessary steps to reduce the NPA and improve the recovery mechanism.

***Keywords*:** Asset Quality, Banking Industry, Gross NPA, Net NPA, Non-Performing Assets, Return on Assets

I. INTRODUCTION

The banking industry plays a critical role in the economy of our country. It grew in leaps and bounds and so is the complexity associated with it. Now a day's Loans measurement from time to time and recovery mechanism of NPA is a significant role in the banking industry. The asset quality in banks, especially the Public Sector Banks (PSUs) is constantly deteriorating and thus causing intolerable stress to the banking sector, regulators, and the Indian economy.

NPA are those loans dispersed by banks or financial institutions which borrowers default in making payment of principal amount or interest. When a bank is not able to recover the loan given or not getting regular interest on such a loan, the flow of funds in the banking industry is affected. The issue of Non Performing Assets has been discussed at length for the financial system all over the world. The dilemma of NPAs is not only distressing the banks but also the entire wealth of the country. In fact, the level of NPAs in Indian banks is nothing but a reflection of the state of health of the industry and trade. Providing credit for economic activities is the prime duty of banking. Lending is generally encouraged because it has the effect of funds being transferred from the system to productive purposes, which results in economic growth. However, lending also carries a risk called credit risk, which arises from the failure of a borrower. Non-recovery of loans along with interest forms a major hurdle in the process of the credit cycle. These loans affect the bank's profitability on a large scale. Though complete elimination of such losses is not possible; banks can always aim to keep the losses at a low level. In this situation, there is a need of the researcher to address how the non-performing assets of the banks affect the bank's profitability, growth and development. For this, the present study is going to discuss this issue. The study covered the Review of Literature, Statement of the problem, Objectives of the study, Methodology, Results & Discussion and Conclusion.

II. REVIEW OF LITERATURE

The following are important reviews related to the present study. **Shanabhogara Raghavendra (2018),** this paper analyzed the impact of the NPA, causes of NPA, and

consequences of NPA in a commercial bank. This study suggested that restructuring of the bank or financial organization, improvement in financial deepening and modernization of appropriate skills for up gradation of credit wordiness and one more thing is staff efficiency, these are a most important thing to solve the present willful defaulter's system in India and world too. **Suvitha K Vikram, Gayathri G (2018),** their study focused the sector, which has higher NPAs (Public/Private sector banks), causes and control measures for rising NPAs. It found out that the level of NPAs is higher in Public Sector Banks compared with Private Sector Banks. Also, focused causes, level of NPA and controlling measures were analyzed. It suggested that the root of the issue of rising NPAs lies in the nature of overseeing credit chance by the banks and wilful defaulters. **Payel Roy and Pradip Kumar Samanta (2017),** this analysis indicated the overall NPA position of all the banks is deteriorating over the years. It found that there is a negative high correlation between GPA and NP, the profit gradually decreases as the GNPA grows. And also point out that most of the banks' profit has reduced considerably. Some of the banks have incurred losses too. The losses due to the increase of NPA can't be avoided only by making provisions against NPA. It suggested that the Provisioning can act as a cushion for NPA losses but it can't be regarded as a solution for growing NPAs in all the selected PSBs. The banks advancing loans should be cautious enough to consider the backgrounds of the loan receiver and make the recovery procedure more stringent. **Raj Kumar Mittal and Deeksha Suneja (2017).**Their study revealed that the extent of NPAs is comparatively more in public sector banks as compared to private sector banks. It suggested that the government is taking many steps to reduce the problem of NPAs but banks should also have to be more proactive to adopt a structured NPAs policy to prevent the non-performing assets and should follow stringent measures for its recovery. Bankers should also consider the ROI on a proposed project and provide loans to customers who have better creditworthiness. **Shiralashetti A.S. and Lata.N.Poojari (2016),** analyzed the causes of NPA and impact of NPA on the profitability of the bank. The study found that there was a moderate relationship exist with Gross NPA and Net profit of the syndicate bank and also found that there was no significant difference between sector wise NPA. The study provided some suggestions to the regulators. **Ombir and Sanjeev Bansal (2016),** their study analyzed the recent trends in non-performing assets (NPAs) of different categories of Indian banks. It is found that the impact of ownership pattern in deciding the level of NPAs is investigated against the perception that public sector banks have a relatively larger level of NPAs. But there was no strong empirical evidence is found in support of this perception. Their findings suggested that public sector banks are as good or as bad as their private counterparts, however, foreign banks have relatively higher profitability as domestic public and private banks. It is also found that a higher level of NPAs negatively affects the profitability of a bank. **Samir and Deepa Kamra(2013)** this study found that the problem of NPA is greater in the public sector banks as compared to private and foreign banks in India. Similarly, the problem of NPAs is more in the non-priority sector than priority and the public sector. Further, SSI sector has the largest share in the total NPA of priority sector. As a result of this, the financial health of banks has been affected adversely. The study suggested that banks in India must apply the basic principles of financial management to solve the problems of mounting NPA and improving recovery management, corporate governance, upgrading technology, etc. **Rama Prasad and Ramachandra Reddy (2012)**, it observed from the study that there is a tremendous decline in NPAs of Andhra Bank as well in Public Sector Banks during the study period, even though enormous growth in advances. This resulted in the introduction of prudential norms. The study suggested that the use of technology like core Banking Solutions will bring change Indian Banking to manage their non-performing assets

III. STATEMENT OF THE PROBLEM

A sound banking sector is important for the flourishing economy. The banking industry is growing in leaps and bounds, and so is the difficulty associated with it. In fact, the level of NPAs in Indian banks is nothing but a reflection of the state of health of the industry and trade. Non-recovery of loans along with interest forms a major hurdle in the process of the credit cycle. Though complete elimination of such losses is not possible, banks can always aim to keep the losses at a low level. The issue of Non Performing Assets has been discussed at length for the financial system all over the world. When a bank is not able to recover the loan given or not getting regular interest on such a loan, the flow of funds in the banking industry is affected. NPA growth involves the necessity of provisions, which reduces the overall profits and shareholders' value. The collapse of the banking sector may have an unfavorable impact on allied and other sectors. The dilemma of NPAs is not only distressing the banks but also the entire wealth of the country. It reflects the reputation and performance of the banks. If the level of NPAs is high it leads to the high probability of credit defaults that affect the profitability and net-worth of banks and also eat away the value of the asset. Against this background, the present study focused on the level of NPA and how it influences the profitability of banks.

IV. OBJECTIVES OF THE STUDY

The present study has the following objectives

- To Know the level of Non-Performing Assets of private and public sector banks

- To identify the impact of Non-Performing Assets on profitability
- To offer the recommendations to the regulators and policymakers

V. HYPOTHESES OF THE STUDY

For the purpose of this study, it has the following null hypotheses

- There is no significant Correlation between NPA and ROA of sample banks
- There is no significant impact of Non-performing Assets on profitability

VI. METHODOLOGY OF THE STUDY

Sample and Sources of data

The present study considers the top 10 banks based on highest Non-performing Assets both public and private sector banks as on June 2018. The required data were collected from www.moneycontrol.com. The study covers for a period of 5 years from April 2014 to March 2018.

Tools used for Analysis

Mean

It is a set of values is the ratio of their sum to the total number of values in the set. Thus, if there are a total of *n* numbers in a data set whose values are given by a group of *x*-values, then the mean of these values, represented by 'm', can be found using this formula:

$$m = \frac{x_1 + x_2 + x_3 + \ldots + x_n}{n}$$

Standard Deviation

The Standard Deviation is a measure of how spread out numbers are. Its symbol is σ (the Greek letter sigma). The formula is the square root of the Variance.

This is the formula for Standard Deviation:

$$\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}$$

Pearson Cross-Correlation

The correlation measures the relationship between the x and, by using the following formula. The Values of correlation coefficient always lies between -1 to 1, if the values are +1 two variables are highly positively correlated, then the value is -1 the variables are highly negatively correlated.

$$= \frac{\sqrt{\sum_{i=1}^{n}(xi = \bar{x})}\,(y_1 - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_2 = x)\,2}\,\sqrt{\sum_{i=1}^{n}(yi = \bar{y})2}}$$

Finally, complete content and organizational editing before formatting. Please take note of the following items when proofreading spelling and grammar:

Linear Regression Model

Regression analyses help to understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. Regression analysis can be used to infer a causal relationship between the independent and dependent variables.

The following two models were run to examine the determinants of Profitability and Non-Performing Assets.

Model (1) explain the Ownership affect Non-performing assets:

$$NPA_{i,\,t} = \beta 0 + \beta_1 pub + \beta_2\, pvt_{i,\,t} + \varepsilon_{it}$$

Model (2) explain the Non-performing Assets affect Return on Assets:

$$ROA_{i,\,t} = \beta 0 + \beta_1 GNPA_{it} + \beta_2 NNPA_{i,\,t} + \varepsilon it$$

Limitations of the present Study

The present study has the following limitations

1. The study is based on secondary data collected from the money control websites. So the quality of the study depends purely upon the accuracy, reliability, and quality of the secondary data source. Approximation and relative measures with respect to the data source might impact the results.
2. The study is limited to covers only for a period of 5 years from 2014 – 2018, therefore, a detailed analysis covering a lengthy period, which may give slightly different results have not been made.
3. The study considered only 10 Banks both public and private sector based on the highest NPA and ignore the other types of banks like foreign and co-operative banks.

VII. RESULTS AND DISCUSSION

Analysis of Net, Gross NPA of Public and Private Sector Banks

The results clearly show that the Net NPA of all public sector banks has gradually surged from 2014 to 2018. Among the sample Banks SBI, PNB, BOI recorded mean NPA was higher than the overall average of the public sector banks. And lowest mean NPA recorded by the UCO Bank. The risk (standard deviation) of SBI, PNB banks recorded the highest risk than the overall risk of public sector banks. In year wise comparisons from 2014 to 2018, it gradually increased their NPA level of all the sample banks. So it recommended to the regulators and respective bank officials

try to reduce the NPA level and dry to improve the recovery mechanism.

The net NPA of private sector banks is presented in **Table 2.** It clearly understood that the mean NPA of ICICI and Axis bank recorded the highest NPA than the overall average NPA of private sector banks. And also found that the risk of the Axis bank is higher than the mean NPA. Among the sample banks yes bank followed by Lakshmi Vilas bank recorded lowest NPA during this study period.

Table 3 shows the results of Gross NPA of public sector banks. It explained that the average NPA of public sector banks is Rs.37, 588.59 crore. But the mean NPA of SBI, PNB, BOI is recorded above the overall average of 1,10,454.79, 48,476.75 and 39,662.79 Crore respectively. The risk of the above three banks are also very high than the remaining sample banks.

Gross NPA of private sector banks results was given in **Table 4.** It understood that the mean NPA of ICICI and Axis bank registered higher NPA with the highest risk than the overall average of the private sector banks. Among the sample banks, LVB recorded lowest Gross NPA. It suggested to the regulators and bank representative of ICICI and Axis Bank should take necessary steps to reduce the same. And also improve the recovery mechanism.

Analysis of Cross-Correlation of NPA and ROA

Table 5 shows the results of cross-correlation analysis of NPA and ROA. It makes clear that there is a significant positive relationship between Gross NPA and Net NPA of public and private sector banks and also negatively significant relationship between Gross and Net NPA with ROA of public &private sector banks at 1% significant level. It means when Gross and Net NPA increases the ROA decreased. So the null hypothesis namely "There is no significant Correlation between NPA and ROA of sample banks" is rejected.

Analysis of linear regression for ownership, Gross and Net NPA

The results of linear regression analysis of public and private sector banks are given in **Table 6.** The above result used a dummy variable (public 1 and private 0). The table explained that the ownership (public and private sector banks) significantly influence the Gross and Net NPA.

Analysis of NPA and Profitability

Table 7 shows the results of NPA and profitability. It understood that the Gross NPA significantly influences the ROA negatively and Net NPA positively influences the ROA of both public and private sector banks. So the null hypothesis namely "There is no significant impact of Non-performing Assets on profitability" is rejected.

Findings and Suggestions for the study

- The present study found out that among the public sector banks the Average Gross and Net NPA of SBI, PNB, BOI is recorded above the overall average of the sample banks.
- The level of Gross and Net NPA of Public & Private sector banks increased gradually on year on year from 2014 to 2018
- So it recommended to the regulators and respective bank officials take the necessary steps to reduce the NPA and improve the recovery mechanism.
- In private sector banks, ICICI and Axis bank recorded the highest NPA than the overall average NPA of sample banks and lowest NPA recorded by the LVB during the study period.
- Also found that there is a significant positive relationship between Gross NPA and Net NPA of public and private sector banks and also negatively significant relationship between Gross and Net NPA with ROA of public &private sector banks.
- The impact of ownership (public and private sector banks) significantly influences the Gross and Net NPA. That is the NPA of public sector banks was higher than that of private sector banks.
- The impact of Gross NPA significantly influences the ROA negatively and Net NPA positively influences the ROA of both public and private sector banks.

VIII. CONCLUSION

The banking industry plays a critical role in the economy of our country. So measuring and maintaining the asset quality of the banks is important for the development of the banks. The asset quality in banks, especially the Public Sector Banks (PSUs) is constantly deteriorating and thus causing intolerable stress to the banking sector, regulators, and the Indian economy. The objectives of the present study are to know the level of Gross & Net NPA and profitability of both public and private sector banks. For this purpose, the study used NPA data from 2014 to 2018. It identified that both the public and private sector banks gradually increased their Gross & Net NPA during the study period. The study found that there is a significant positive relationship between Gross NPA and Net NPA of public and private sector banks and also negatively significant relationship between NPA with ROA of public &private sector banks. The impact of ownership (public and private sector banks) significantly influences the Gross and Net NPA. That is the NPA of public sector banks was higher than that of private sector banks. The impact of Gross NPA significantly influences the ROA negatively and also Net NPA positively influences the ROA of both public and private sector banks. So the study recommended to the regulators and respective bank officials

take the necessary steps to reduce the NPA and improve the recovery mechanism. The scope of the study may proceed to the level of NPA of Co-operative and foreign banks and also identify the level of NPA at each sector like priority and non-priority, Small Scale Industries, Agriculture, infrastructure, etc.,

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AUTHORS PROFILE

Dr. B. Senthil Arasu, basically an Electronics and Communication Engineer completed his doctorate in the area of stock price behavior. Has a total experience of twenty-one years, currently working as an Associate Professor at National Institute of Technology, Trichy.He has been conducting Management Development Program to various organizations like Tamilnadu Newsprint Limited, BHEL, NLC, L&T and various other small and medium enterprises, He was a Co-Investigator for a UKIERI sponsored project titled Building Management Capabilities in SME's across the country. He has published papers in International Journals with impact factor and also a Recognized Guide and Examiner and Board of Studies Member under various Universities.

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R.Ramya acquired her MBA in finance and marketing at MAM College of Engineering, Tiruchirappalli. Currently working as a Research Assistant at National Institute of Technology, Tiruchirappalli. She has published one research paper at an international journal and presented one paper in International Conference.

Table 1 Results of Net NPA of Public Sector Banks (Rs. in Crore)

Table 1 Results of Net NPA of Public Sector Banks (Rs. in Crore)

PUB	SBI	PNB	BOI	IDBI	BOB	UNION BANK	CANARA BANK	CENTRAL BANK	IOB	UCO	Average
2014	31,096.07	9,916.99	7,417.22	4,902.30	6,034.76	5,340.25	5,965.46	6,649.00	5,658.12	3,556.43	8,653.66
2015	27,590.58	15,396.50	13,517.57	5,992.52	8,069.49	6,918.97	8,740.09	6,807.00	9,813.33	6,330.58	10,917.66
2016	55,807.02	35,422.56	27,996.40	14,643.39	19,046.46	14,025.94	20,832.91	13,242.00	19,212.57	11,443.59	23,167.28
2017	58,277.38	32,702.10	25,305.03	25,205.80	18,080.00	18,833.00	21,648.98	14,217.83	19,749.00	10,703.39	24,472.25
2018	1,10,854.70	48,684.29	28,207.27	28,665.14	23,483.00	24,326.00	28,542.40	17378.54	20,399.66	14,082.07	34,462.25
Total	2,83,625.75	1,42,122.44	1,02,443.49	79,409.15	74,713.71	69,444.16	85,729.84	58,293.83	74,832.68	46,116.06	1,01,673.11
Mean	**56,725.15**	**28,424.49**	**20,488.70**	**15,881.83**	**14,942.74**	**13,888.83**	**17,145.97**	**11,658.77**	**14,966.54**	**9,223.21**	**20,334.62**
SD	33312.66	15732.03	9468.36	10842.41	7520.18	7985.23	9479.08	4754.01	6775.36	4219.28	11,008.86

Source: Collected from moneycontrol.com

Table 2 Results of Net NPA of Private Sector Banks

PVT	ICICI	AXIS	HDFC	J & K	KOTAK	KVB	FEDERAL	YES Bank	LVB	South Indian	Average
2014	3,297.96	1,024.62	820.03	101.99	573.56	139.91	321.56	26.07	443.39	281.67	706.87
2015	6,255.53	1,316.71	896.28	1,236.32	609.08	280.97	373.27	29.38	302.49	357.05	1,070.17
2016	12,963.08	2,522.14	1,320.37	2,163.95	1,261.96	216.17	950.01	284.47	231.64	1,185.26	2,115.13
2017	25,216.81	8,626.60	1,843.99	24,253.70	1,718.07	1,033.46	941.2	1,072.27	418.42	674.56	4,257.88
2018	27,823.56	16,592.00	2,601.02	2,791.12	1,665.10	1,862.83	1,551.96	1,312.75	1,457.89	1,415.80	5,814.57
Total	75,556.94	30,082.07	7,481.69	30,547.08	5,827.77	3,533.34	4,138.00	2,724.94	2,853.83	3,914.34	13,964.63
Mean	**15,111.39**	**6,016.41**	**1,496.34**	**6,109.42**	**1,165.55**	**706.67**	**827.60**	**544.99**	**570.77**	**782.87**	**2,792.93**
SD	11,026.30	6,668.42	739.87	10,193.49	553.23	739.35	503.76	606.32	503.34	501.69	2,258.16

Source: Collected from moneycontrol.com

Chart - 1 Result of Net NPA of Public Sector Banks

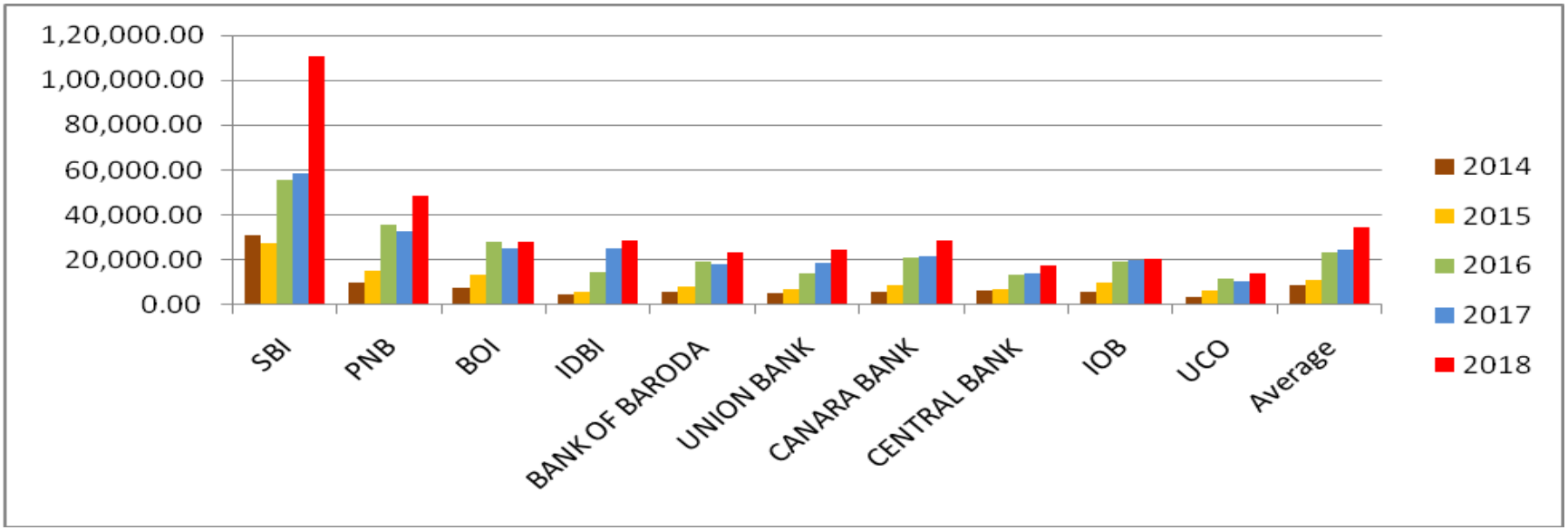
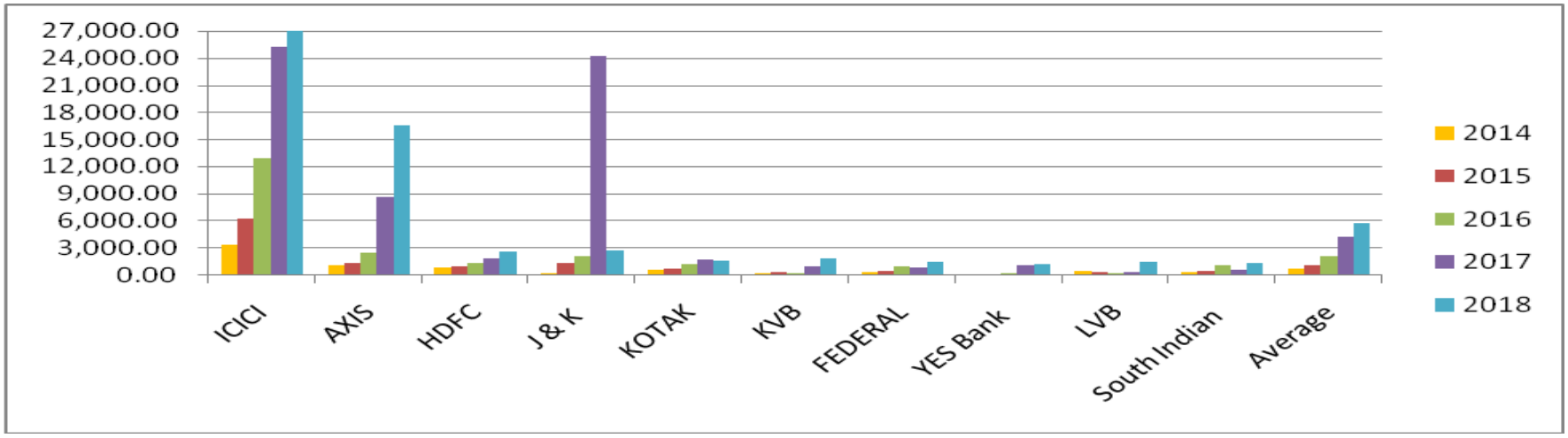


Chart -2 Result of Net NPA of Private Sector Banks



Source: Computed using above Tables

Table 3 Results of Gross NPA of Public Sector Banks

PUB	SBI	PNB	BANK OF INDIA	IDBI	BANK OF BARODA	UNION BANK	CANARA BANK	CENTRAL BANK	IOB	UCO	Average
2014	61,605.35	18,880.06	11,868.60	9,960.16	11,875.90	2,563.74	7,570.21	11,500.00	9,020.48	6,621.37	15,146.59
2015	56,725.34	25,694.86	22,193.24	12,684.97	16,261.44	13,030.87	13,039.96	11,873.00	14,922.45	10,265.05	19,669.12
2016	98,172.80	55,818.33	49,879.13	24,875.07	40,521.04	24,170.89	31,637.83	22,721.00	30,048.62	20,907.73	39,875.24
2017	1,12,342.99	55,370.45	52,044.52	44,752.59	42,719.00	33,712.28	34,202.04	27,251.33	35,098.26	22,540.95	46,003.44
2018	2,23,427.46	86,620.05	62,328.46	55,588.25	56,480.00	33,712.00	47,468.47	38131	38,180.15	30,549.92	67,248.58
Total	5,52,273.94	2,42,383.75	1,98,313.95	1,47,861.04	1,67,857.38	1,07,189.78	1,33,918.51	1,11,476.33	1,27,269.96	90,885.02	1,87,942.97
Mean	**1,10,454.79**	**48,476.75**	**39,662.79**	**29,572.21**	**33,571.48**	**21,437.96**	**26,783.70**	**22,295.27**	**25,453.99**	**18,177.00**	**37,588.59**
SD	67435.82	27162.99	21500.67	19994.70	18888.55	13561.85	16313.36	11187.89	12816.51	9691.77	21,855.41

Source: Collected from moneycontrol.com

Table 4 Results of Gross NPA of Private Sector Banks

PVT	ICICI	AXIS	HDFC	J and K	KOTAK	KVB	FEDERAL	YES bank	LVB	SOUTH INDIAN	Average
2014	10,505.84	3,146.41	2,989.28	783.42	1,059.44	279.18	1,087.41	174.93	546.46	432.62	2,100.50
2015	15,094.69	4,110.19	3,438.38	2,464.08	1,237.23	677.78	1,057.73	313.4	454.62	643.45	2,949.16
2016	26,221.25	6,087.51	4,392.83	4,368.61	2,838.11	511.18	1,667.77	748.98	391.25	1,562.36	4,878.99
2017	42,159.38	21,280.48	5,885.66	6,000.01	3,578.60	1,483.81	1,727.05	2,018.56	640.19	1,149.01	8,592.28
2018	53,240.18	34,248.64	8,606.97	6,006.70	3,825.38	3,015.76	2,795.62	2,626.80	2,694.21	1,980.30	11,904.06
Total	1,47,221.34	68,873.23	25,313.12	19,622.82	12,538.76	5,967.71	8,335.58	5,882.67	4,726.73	5,767.74	30,424.97
mean	**29,444.27**	**13,774.65**	**5,062.62**	**3,924.56**	**2,507.75**	**1,193.54**	**1,667.12**	**1,176.53**	**945.35**	**1,153.55**	**6,084.99**
SD	18,047.73	13,610.43	2,270.76	2,282.53	1,294.59	1,114.95	704.37	1,088.96	982.16	638.48	4,203.49

Source: Collected from moneycontrol.com

Table 5 Results of Cross-Correlation

		GNPA PUB	GNPA PVT	NNAPUB	NNPAPVT	ROAPUB	ROAPVT
GNPA PUB	Pearson Correlation	1					
	Sig. (2-tailed)						
GNPAPVT	Pearson Correlation	.972**	1				
	Sig. (2-tailed)	0.006					
NNPA PUB	Pearson Correlation	.996**	.950*	1			
	Sig. (2-tailed)	0.000	0.013				
NNPA PVT	Pearson Correlation	.967**	.999**	.944*	1		
	Sig. (2-tailed)	0.007	0.000	0.016			
ROAPUB	Pearson Correlation	-.998**	-.964**	-.993**	-.956*	1	
	Sig. (2-tailed)	0.000	0.008	0.001	0.011		
ROAPVT	Pearson Correlation	-.973**	-.997**	-.955*	-.998**	.961**	1
	Sig. (2-tailed)	0.005	0.000	0.011	0.000	0.009	

Source: Computed using SPSS

Table 6 Results of Linear regression for Gross and Net NPA

Variable	Model 1	Model 2
Dep.variable	Gross NPA	Net NPA
Constant	37588.593	20334.622
Private banks	-31503.599	-17541.697
Beta	-0.757	-0.788
R2	0.573	0.621
F-value	10.74	13.12
p-value	0.011	0.007

Table 7: Results of Linear regression for NPA and Profitability

Variable	Model 1	Model 2
Dep.variable	ROA-pub	ROA-Pvt.
constant	0.899	1.344
GNPA	-3.36E-05	1.55E-05
NNPA	4.29E-06	0.000
R2	0.996	0.996
F-value	245.58	267.05
p-value	0.004	0.004

